The Biology of Parasitic Flowering Plants. By Job Kuijt. 246 pp., 176 figs. and photographs. University of California Press, Berkeley. 1969. $15.00.

This masterly treatise brings together significant information on parasitic flowering plants from a vast and scattered literature—the first serious attempt to describe and compare the various modes of parasitism and plant structure in all eight unrelated groups of dicotyledons in which parasitism is found. Kuijt proposes that parasitism has arisen independently in each of these groups: (1) Santalales, (2) Scrophulariaceae (tribe Rhinantheae), (3) Rafflesiaceae and Hydnoraceae, (4) Balanophoraceae, (5) *Cuscuta,* (6) *Cassytha,* (7) Lennoaceae, (8) *Krameria.* Each group is treated in monographic fashion with a scholarly discussion of such pertinent aspects as general habit and nature of the plants, flowers, pollination, embroyology, fruits and seeds, dispersal methods, and mode of parasitism, all of which are illustrated with an abundance of excellent drawings by the author and photographs. In addition, there is a valuable discussion of the phylogenetic relationships of each group often supplemented by original comments and observations. The introductory chapter traces the historical development of man's awareness of parasitism and presents a fascinating account of the role of parasitic plants in medicine, magic, folklore, and commerce. It is interesting to read of the historical appreciation of sandalwood (*Santalum* spp.) and to learn how its sale led to the rise of the Hawaiian monarchy of King Kamehameha and to the virtual destruction of the magnificent Hawaiian groves of *S. freycinetianum.* An entire chapter is devoted to a description of the various haustorial connections and the intricacies of their development. This chapter is superbly illustrated, showing the artist Kuijt at his best. Another chapter on the physiological aspects of parasitism is probably more abbreviated (15 pages) than those who are ecologically or physiologically oriented would prefer, but such aspects as germination, nutrition and water economy, effects on host, and host specificity are thoroughly summarized. Kuijt criticizes the use of the terms "facultative" and "obligate" (in referring to green parasites of the family Scrophulariaceae) as having little meaning since plants that are facultative under the ideal conditions of cultivation are always obligate parasites in nature. This is doubtless true but his further argument that *Cuscuta* can also complete its life cycle when supplied a nutrient medium hardly seems pertinent. Kuijt, in rejecting these terms and the concepts they represent, fails to consider the usefulness of the terminology for indicating an evolutionary degree of parasitism in the Rhinanthoid Scrophulariaceae. Certainly, green parasites that are (facultatively) able to complete their life cycle without a host even under greenhouse conditions are less advanced down the road toward parasitism than the plants that (obligately) must have a host (or its equivalent nutritional medium) present. The last chapter on evolutionary aspects speculates on the origin and evolution of the haustorial connection and considers the evolutionary modifications, often highly reduced and not infrequently quite bizarre, that the parasites have undergone.

In spite of the huge amount of material that has been summarized for this treatise, one is impressed by some of the large gaps in our knowledge of parasitic plants, especially in such groups as Rafflesiaceae, Hydnoraceae, and Balanophoraceae, and Kuijt is careful to point out those areas where even basic information is lacking. It would be well for those botanists who have these plants accessible to note those cases where they could supply original and useful observations.

This book, of quarto size with double column format, is a particularly handsome one and the author and the University of California Press are to be congratulated on their achievement.—Lawrence R. Heckard, Jepson Herbarium, University of California, Berkeley 94720.